



PATENT

Attorney Docket No.: 1139-201

**BOARD OF PATENT APPEALS  
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

In re application of: Grant et al.

SERIAL NO.: 09/706,844

FILING DATE: November 7, 2000

FOR: Gas Trimmer Cutting Line

Group Art Unit: 3724

Examiner: Prone, Jason D.

**BRIEF OF PATENT OWNER ON APPEAL**

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**1. Real Party in Interest**

The application is assigned to Weed Tiger, Inc., a corporation organized and existing under and by virtue of the laws of the Commonwealth of Virginia and having its principal place of business at P.O. Box 95, Ebony, Virginia 23845.

**2. Related Appeals and Interferences**

There are no related appeals or interferences.

**3. Status of Claims**

Claims 1-3, 5, 6, 8-13, 15, 17 and 19 remain pending in the application. Claim 4 was canceled and claims 1, 2, 8, 9, and 19 were amended in response to the Office Action dated March 12, 2003, claims 7, 14, 16, and 18 were canceled and claim 3 was amended in response to

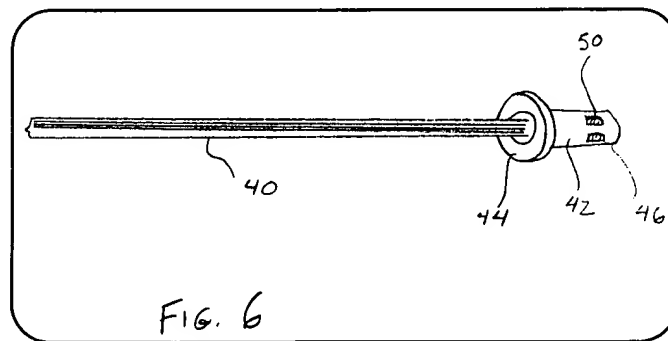
the Second Office Action dated September 25, 2002, and claims 6, 10, 11, 12, 13, 15, and 17 were amended in response to the First Office Action dated February 28, 2002. The claims on Appeal are included in the Appendix.

4. *Status of Amendments*

There are no amendments to the claims after final rejection.

5. *Summary of the Invention*

With reference to Fig. 6, reproduced here below, Applicant's invention is a trimmer line with a collar-flange unit. The trimmer line is a monofilament line with the collar-flange unit secured to one end of the line. The collar-flange unit is a single concentric unit. The collar and flange portions of the unit are concentric, with the flange portion having a greater diameter than that of the collar portion. The collar portion has a first end and a second end. The first end of the collar portion is mounted flush with one end of the monofilament line. The flange portion of the unit is adjacent to and in communication with the second end of the collar. Accordingly, the flange portion of the collar-flange unit is mounted along a portion of the length of the monofilament line in close proximity to the end of the monofilament line in communication with the collar portion.



(Fig. 6 of *Grant*, U.S. Serial No. 09-706,844)

The monofilament line with the mounted collar-flange unit is placed through an aperture of a trimming apparatus. The flange portion of the collar-flange unit sits against an interior wall

of the trimming apparatus with the collar portion extending into an interior section of the trimming apparatus. The monofilament line extends through the aperture in the trimming apparatus to make contact with vegetation. The purpose of the placement of the collar-flange unit within a trimming apparatus is to allow the collar portion of the unit to function as a hinge when the monofilament line is rotated about a central axis of the trimming apparatus. This reduces the likelihood of breakage of the monofilament trimming line as it is exposed to vibration, stress, and/or strain. By enhancing the strength of the trimming line, the longevity of the product is maintained. Accordingly, the collar-flange unit mitigates breakage of the monofilament line by enabling the hinge action.

**6. Issues**

Claims 1, 3-6, 8-13, 15, 17, and 19 are rejected as being unpatentable over *Stephens et al.* in view of *Ustin* and *Iacona et al.* under 35 U.S.C. §103(a). Claim 2 is rejected as being unpatentable over *Stephens et al.* in view of *Ustin* and *Iacona et al.* and further in view of *Fogle* under 35 U.S.C. §103(a).

**7. Grouping of Claims**

There are two groupings of claims. Applicant has separated the pending claims into two different groups as the claims in the different groups do not stand or fall together, and hereby requests separate consideration of the claims in each of the separate groups.

Group I: Claims 1, 3-6, 8-13, 15, 17, and 19 are rejected on the *Stephens et al.* patent in view of *Ustin* and *Iacona et al.* The Examiner asserts that all of the elements of these claims are obvious under 35 U.S.C. §103(a).

Group II: Claim 2 is rejected on the *Stephens et al.* patent in view of *Ustin* and *Iacona et al.* as applied to claim 1 and in further view of *Fogle*. The Examiner asserts that all of the elements of these claims are obvious under

## ARGUMENT

### I. Group I: Rejection of Claims 1, 3-6, 8-13, 15, 17, and 19 under 35 U.S.C. §103(a).

In the Official Action of July 29, 2003, the Examiner rejected claims 1, 3-6, 8-13, 15, 17, and 19 under 35 U.S.C. §103(a) as being unpatentable over *Stephens et al.*, U.S. Patent No. 5,406,708, in view of *Ustin*, U.S. Patent No. 2,872,505 and *Iacona et al.*, U.S. Patent No. 5,887,348. The U.S. Supreme Court set forth the factual inquiries in determining obviousness under 35 U.S.C. §103(a) as follows:

1. Determining the scope and contents of the prior art;
2. Ascertaining the differences between the prior art and the claims at issue;
3. Resolving the level of ordinary skill in the pertinent art; and
4. Considering objective evidence present in the application indicating obviousness or non-obviousness in view of the first three factors.

*Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).<sup>1</sup> In following this factual inquiry, the Examiner must first consider the scope and contents of the prior art.

#### A. Discussion of the Contents of the Prior Art References Cited by the Examiner.

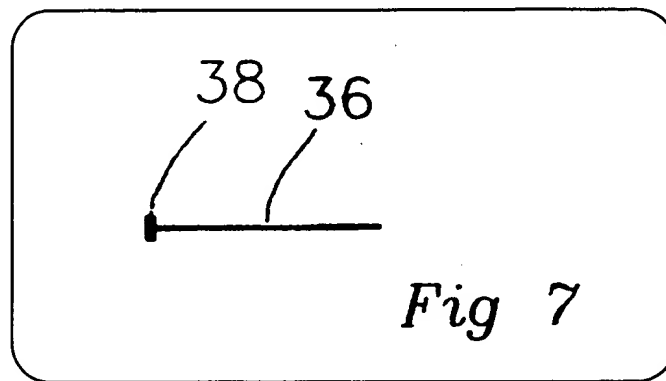
In rejecting claims 1, 3-6, 8-13, 15, 17, and 19 under 35 U.S.C. §103(a) as being unpatentable over *Stephens et al.* in view of *Ustin* and *Iacona et al.*, the Examiner is hypothetically combining a vegetation cutter with an electrical connector in an attempt to reconstruct Applicant's invention.

The *Stephens et al.* reference shows a trimmer line for cutting vegetation. See Fig. 7

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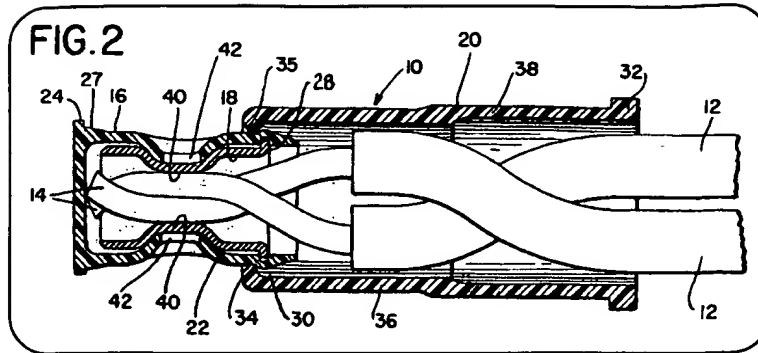
<sup>1</sup> Applicant wishes to note that the U.S. Supreme Court in *Graham v. John Deere Co.* set forth a three part factual inquiry under 35 U.S.C. §103. Examiner's noted fourth part is merely recognized as the analysis of the results of the first three parts of the inquiry noted here.

(reproduced below). The trimmer line has an “encumbrance 38 such as a knot or crimped washer.” Col. 3, lines 14-18. The frame of the cutting apparatus has several passageways therein adapted to receive the trimmer line. The trimmer line is pulled through the passageway with the encumbrance retained therein. It should be noted, the encumbrance as shown in Fig. 7 has a uniform diameter and merely functions to prevent one end of the trimmer line within the passageway of the trimming apparatus from exiting the passageway. Accordingly, *Stephens et al.* shows a trimmer line with an encumbrance at one end to prevent the line from exiting a passageway of a trimmer apparatus.



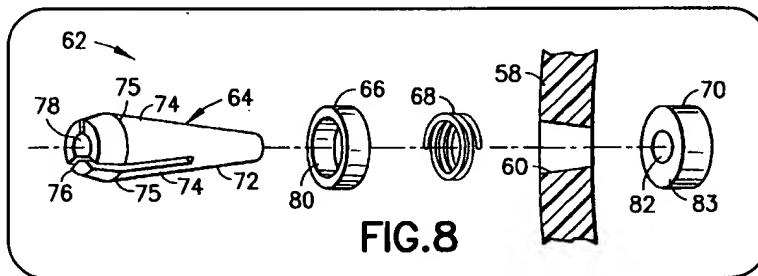
(Fig. 7 of *Stephens et al.*, US 5,406,708)

The *Ustin* reference is an apparatus for connecting electrical wires. See Fig. 2 (reproduced below). This apparatus is known as a splice cap. A set of electrical wires with exposed electrical conductors “are inserted into the splice cap until the ends of the wires abut the closed end of insulator 16. Cap 18 is then deformed as by crimping at circumferentially spaced locations 40 thus to secure cap 18 to wires 14 and to connect them electrically and mechanically.” Col. 3, lines 19-25. The splice cap has two coaxial longitudinal portions which merge at a middle section of the body of the cap. One end of a first longitudinal portion has a flange (32), and a second end of a second longitudinal portion has a flange (34). Accordingly, the *Ustin* patent discloses an apparatus that connects a set of exposed electrical wires to a splice cap for use in electrical technologies.



(Fig. 2 of *Ustin*, US 2,872,505)

The *Iacona et al.* reference discloses a clamping structure for a string trimmer. See Fig. 8 (reproduced below). The clamping structure is comprised of several items, including a collet (64), a collar (66), a spring (68), and a lock (70). See Col. 7, lines 6-10. A vegetation cutting string must be forced through an opening in the clamping structure defined by clamping edges (76) and through the passage (78) of the collet (64). See Col. 7, lines 49-52. Accordingly, the *Iacona et al.* patent discloses a multi-component clamping structure to hold a string trimmer line.



(Fig. 8 of *Iacona et al.*, US 5,887,348)

B. Discussion of the Obviousness in Combination of Prior Art References in View of the References Cited by the Examiner

In reviewing and studying the prior art references of *Stephens et al.*, *Iacona et al.* and *Ustin*, it is clear that the scope of the contents are divergent in nature. The *Stephens et al.* patent accounts for a monofilament cutting line with an encumbrance at one end of the line. There is no consideration given for a specific structure for the encumbrance. Nor is there consideration for a structure that enables a portion of the monofilament line within the collar to extend beyond the flange into the trimmer head with a concentric portion of the collar enveloping the line. There is a reference to an encumbrance, but there is no structure shown that discloses the elements of

Applicant's collar and flange structure. Accordingly, *Stephens et al.* fails to account for a structure associated with the encumbrance as claimed by Applicant, wherein the encumbrance includes a single unit comprised of a concentric collar and flange with different size diameters associated therewith.

The *Iacona et al.* patent accounts for a clamping member comprised of multiple parts with an unenclosed filament line extending forward and rearward of the clamping member. Fig. 7, item 14. However, *Iacona et al.* does not provide for: (1) a clamping member being a single unit comprised of a flange and a collar, (2) the collar extending from the flange to the distal end of the monofilament, or (3) the distal end of the monofilament being flush with the distal end of the collar. Accordingly, *Iacona et al.* also fails to account for the above-outlined elements detailed in Applicant's claimed structure.

The *Ustin* patent accounts for a splice cap for connecting electrical wires, but does not discuss or even mention monofilament trimmer lines or relate to monofilament trimmer lines. *Ustin* does specifically discuss the requirement to strip the insulation from the portion of the wires entering the splice cap in order to receive a proper electrical connection for electrical wiring. The splice cap of *Ustin* does have an appearance that is somewhat similar to that of Applicant's collar-flange, but such appearance results from the purpose of stiffening the splice cap with regard to the electrical wiring placed therein as opposed to supporting the placement of the cap in relation to a trimmer head assembly which to the best of Applicant's knowledge would never be placed within a trimmer head assembly in the first place. Accordingly, since the splice cap of *Ustin* is adapted to receive a different material for a different intended purpose, *Ustin* fails to account for the use of the splice cap or flange in association with a trimmer line or a comparable structure.

Applicant further contends that a person with ordinary skill in the art would not attempt to combine a vegetation trimming apparatus (*i.e. Stephens et al.*) with that of a splice cap for an electrical connector (*i.e. Ustin*). In this respect, the Examiner is attempting to combine references describing different inventions from non-analogous art. "Two criteria have evolved

for determining whether prior art is analogous: (1) whether the art is from the same field of endeavor, regardless of the problem addressed, and (2) if the reference is not within the field of the inventor's endeavor, whether the reference still is reasonably pertinent to the particular problem with which the inventor is involved." *In re Clay*, 966 F.2d 656, 23 USPQ2d 1058 (Fed. Cir. 1992). An electrical connector apparatus is clearly not within the same field of endeavor as a string trimmer line. Both a string trimmer line apparatus and an electrical connector serve different purposes to solve different problems. A trimmer line and associated apparatus and an electrical connector do not even relate to the same industry. A person of ordinary skill in the art seeking to solve a problem for a vegetation trimmer line would not be reasonably expected or motivated to look to electrical connectors. Furthermore, when considering "reasonable pertinence" of the problem to be solved, both the purposes of the invention and the prior art are important in determining factors. "If a reference disclosure has the same purpose as the claimed invention, the reference relates to the same problem, and that fact supports use of that reference in an obviousness rejection. . . . If it is directed to a different purpose, the inventor would accordingly have had less motivation or occasion to consider it." *Id.* at 659. A person of ordinary skill in the art would not reasonably have expected to solve the problem of a weed trimmer apparatus by considering a reference concerning an electrical connector. Accordingly, the combination of an element from an electrical connector is not within Applicant's field of endeavor as it does not address the mechanical application or solution as provided which is at the heart of Applicant's invention.

Even if as a general matter it would be proper to combine an electrical connector with a vegetation trimming apparatus, it would not necessarily be obvious to combine them in view of one another. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or to combine reference teachings. See MPEP §2143. "The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in the applicant's disclosure." MPEP §2143, (citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991)). Here *Stephens et al.* teaches the use of some form of an "encumbrance" at one end of the trimmer line. However, as noted by the Examiner, *Stephens et*

*al.* fails to teach or suggest any structure to the encumbrance. While *Ustin et al.* teaches a splice cap for an electrical connector, there is no suggestion of employing a trimmer line with the splice cap or the benefit of utilizing the mechanical structure of the splice cap within a trimming apparatus or like environment. “The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art suggests the desirability of the combination.” MPEP §2143.01 (citing *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990)). The only suggestion for the combination of elements that form Applicant’s invention is found in Applicant’s invention. Accordingly, the Applicant respectfully submits that claims 1, 3-6, 8-13, 15, 17, and 19 would not have been obvious for the above outlined reasons and a ruling by the Board of Patent Appeals in Applicant’s favor and allowance of claims 1, 3-6, 8-13, 15, 17, and 19 is respectfully requested.

C. Discussion of Applicant’s Invention in View of the Prior Art References and Prior Art References Failure to Teach All of the Claimed Limitations of Applicant’s Invention.

Applicant’s invention functions on a different principle than that taught in either *Stephens et al.* or *Iacona et al.* The *Stephens et al.* patent accounts for a monofilament cutting line with an encumbrance at one end of the line. There is no consideration given for a specific structure for the encumbrance or reference to any of the benefits derived therefrom. There is no consideration for a structure that enables a portion of the monofilament line to extend beyond the flange into the trimmer head with a concentric portion of the collar enveloping the line. Although *Stephens et al.* does make reference to an encumbrance, there is no structure shown that discloses the elements of Applicant’s collar and flange structure. Applicant’s claimed invention provides detailed structure that provides for a single unit encumbrance comprised of a concentric collar and flange with different size diameters associated therewith. Accordingly, *Stephens et al.* fails to account for the structure of Applicant’s claimed invention as detailed in claim 1.

In combination with *Stephens et al.*, the Examiner uses the *Iacona et al.* patent to support the structure of the collar and flange unit of Applicant. However, the clamping member of *Iacona et al.* pertains to a member comprised of multiple parts with an unenclosed filament line

extending forward and rearward of the clamping member. See Fig. 7, item 14. *Iacona et al.* does not provide for: (1) a clamping member being a single unit comprised of a flange and a collar, (2) the collar extending from the flange to the distal end of the monofilament, or (3) the distal end of the monofilament being flush with the distal end of the collar. Accordingly, *Iacona et al.*, whether taken individually or together with *Stephens et al.*, fails to account for the above-outlined elements of Applicant's claimed invention as detailed in claim 1.

As *Stephens et al.* and *Iacona et al.* lack all of the elements of Applicant's claimed invention, it could not have been obvious to one of ordinary skill in the art to combine these references to construct Applicant's invention. It is accepted that "[t]o establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03 (citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). There is no teaching, suggestion, or motivation in *Stephens et al.* for a monofilament line with a collar and flange unit adjacent to a distal end of the monofilament line. Similarly, *Iacona et al.* does not teach or suggest a single unit structure for its clamping member comprised of a concentric flange and collar with the flange having an external diameter great than the diameter of the collar. Nor does *Iacona et al.* teach or suggest the collar extending from the flange to the distal end of the monofilament, or the distal end of the monofilament being flush with the distal end of the collar. *Iacona et al.* at best teaches the inverse of Applicant's structure. *Iacona et al.* provides a clamping mechanism (62) with a collet (64) having clamping edges (76) located towards the proximal end of the clamping mechanism while the lock (70) is positioned towards the distal end of the clamping mechanism which is the required structure of *Iacona et al.* so that it may accomplish its intended purpose of exerting force on the string (14) either through the use of a spring (68) or the centrifugal force generated by the rotating trimmer head assembly. However, Applicant's claimed invention requires the extension of the collar (42) from the flange (44) to the distal end of the monofilament (46). This enables the collar to function as a hinge when the trimmer line is rotating in conjunction with the trimmer head. The hinge effect reduces the occurrences of breakage of the trimmer line, and thus adds strength and longevity to the trimmer line. The elements that the combination of *Stephens et al.* with *Iacona et al.* fail to address are critical to the advantages found in Applicant's invention. Each of the prior art

references when taken together fail to teach all of the claim limitations and fail to establish the prima facie obviousness of the claimed invention. Accordingly, the Applicant respectfully submits that claims 1, 3-6, 8-13, 15, 17, and 19 would not have been obvious in view of *Stephens et al.* ('708) in view of *Iacona et al.* ('348) and a ruling by the Board of Patent Appeals in Applicant's favor and allowance of claims 1, 3-6, 8-13, 15, 17, and 19 is respectfully requested.

Furthermore, as the CAFC has made clear, the prior art must teach the desirability of the modification in question. "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon et al.*, 733 F.2d 900, 221 USPQ 1125, 1127 (Fed. Cir. 1984). It is axiomatic that the subject matter of the claims may not be considered obvious as a result of a hypothetical combination of references unless something in the references themselves suggest that an advantage may be derived from combining their teachings. In this respect, the CAFC appears to speak directly to the issue of the need to determine the scope and contents of the prior art. Although both *Stephens et al.* and *Iacona et al.* relate to vegetation trimmer apparatus and their associated trimmer line (unlike *Ustin* which does not even relate to any form of trimmer apparatus), there is no desirability to provide any structure to the encumbrance of *Stephens et al.*, as is suggested by the Examiner. There is no desire within the references themselves to combine the elements of the prior art to arrive at Applicant's invention. The desirability can be found at best only through the use of Applicant's invention. Therefore, the prior art references whether taken individually or in combination do not render Applicant's invention obvious as there is no teaching, suggestion, or motivation to combine elements found in different prior art references having different purposes to build the product of Applicant. Accordingly, Applicant respectfully contends that the combination of *Stephens et al.* with *Iacona et al.* does not meet the standard set by the CAFC's interpretation of 35 U.S.C. §103(a), and respectfully requests the Board of Patent Appeals rule in Applicant's favor and direct allowance of claims 1, 3-6, 8-13, 15, 17, and 19.

## **II. Group II: Rejection of Claim 2 under 35 U.S.C. §103(a).**

The Official Action of July 29, 2003 rejected claim 2 under 35 U.S.C. §103(a) as allegedly being unpatentably obvious over *Stephens et al.*, U.S. Patent No. 5,406,708, in view of *Ustin*, U.S. Patent No. 2,872,505 and *Iacona et al.*, U.S. Patent No. 5,887,348, in further view of *Fogle*, U.S. Patent No. 6,434,837. The Examiner maintains that it would have been obvious to combine the prior art references that served the basis for the rejection of claim 1 with *Fogle* who teaches a monofilament with a non-circular cross section. Accordingly, the Examiner appears to maintain that it would have been obvious to one having ordinary skill in the art at the time the invention was made to use the cited prior art references to construct the Applicant's claimed invention.

In rejecting claim 2 under 35 U.S.C. §103(a) as being unpatentable *Stephens et al.*, in view of *Ustin*, and *Iacona et al.*, and further in view of *Fogle*, U.S. Patent No. 6,434,837, the Examiner is hypothetically combining various apparatuses that include string trimmer assemblies and an electrical connector with a trimmer line structure to allegedly construct the Applicant's claimed invention. The U.S. Supreme Court set forth the factual inquiries in determining obviousness under 35 U.S.C. §103(a) as:

- A. Determining the scope and contents of the prior art;
- B. Ascertaining the differences between the prior art and the claims at issue;
- C. Resolving the level of ordinary skill in the pertinent art; and
- D. Considering objective evidence present in the application indicating obviousness or non-obviousness in view of the first three factors.

*Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966).<sup>2</sup> In following this factual inquiry, the Examiner must first consider the scope and contents of the prior art.

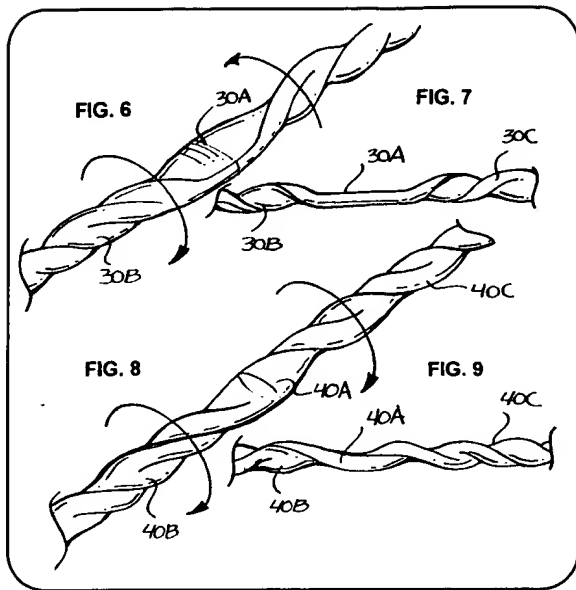
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<sup>2</sup> See, supra, footnote 1.

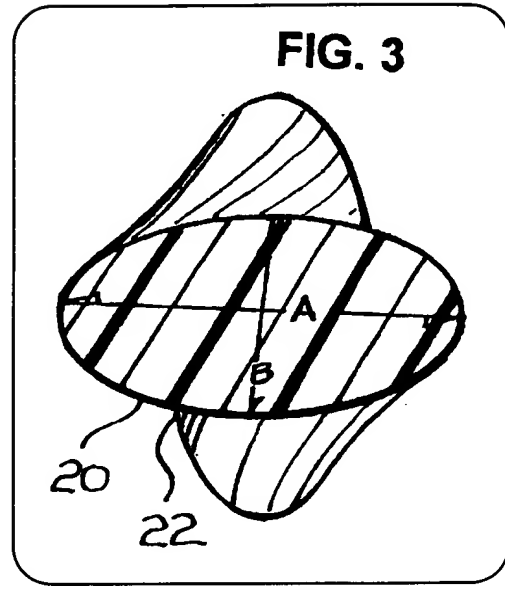
A. Discussion of the Contents of the Prior Art References Cited by the Examiner.

The discussion of *Stephens et al.*, *Ustin*, and *Iacona et al.* above are hereby incorporated by reference.

The *Fogle* reference discloses a twisted monofilament trimmer line for cutting vegetation. See Figs. 6-9 (reproduced below). As shown in Figs. 3 and 4 of *Fogle* and noted in the Abstract, the monofilament line has an oval cross section (*i.e.* circular in nature). “[T]he cross-sectional shape, taken transversely of the longitudinal axis, is an oval having a major axis A and a minor axis B. The line is modified following extrusion to impart a permanent helical twist along its length; so that concave portions 22, as illustrated in FIGS. 3 and 4, are formed along the length of the line.” Col. 4, lines 2-9. However, as noted in Applicant’s amended claim 2 and shown in Applicant’s Fig. 6, Applicant’s invention incorporates a non-circular *uniform* cross section of the monofilament line that extends from the proximal end to the distal end of the monofilament line. However, as clearly demonstrated in Figs. 6-9, the monofilament line of *Fogle* is circular in nature as unambiguously detailed in Fig. 3. See Fig. 3 (reproduced below). *Fogle* also incorporates a non-uniform structure as exemplified by non-twisted portions (30A) and (40A). Accordingly, unlike Applicant’s claimed invention, *Fogle* shows a monofilament trimmer line with a circular non-uniform shape across the length of the line.



(Figs. 6-9 of *Fogle*, US 6,434,837)



(Fig. 3 of *Fogle*, US 6,434,837)

**B. Discussion of the Obviousness in Combination of Prior Art References in View of the References Cited by the Examiner.**

The discussion of *Stephens et al.*, *Ustin*, *Iacona et al.*, and *Fogle* above are hereby incorporated by reference. Applicants respectfully submit that claim 2 would not have been obvious for the reasons discussed in Section I above regarding *Stephens et al.*, *Ustin*, and *Iacona et al.* Accordingly, Applicant respectfully requests a ruling by the Board of Patent Appeals and Interferences in Applicant's favor and allowance of claim 2.

In reviewing and studying the prior art references of *Stephens et al.*, *Ustin*, *Iacona et al.*, and *Fogle*, it is clear that the scope of the contents do not address the limitation of claim 2 of Applicants invention. The prior art references of *Stephens et al.*, *Ustin*, and *Iacona et al.* are silent as to the shape of the trimmer line. From the drawing figures, it appears that the cross-sectional shape of the trimmer line in each of these references is circular. The Examiner has applied the *Fogle* reference to claim 2, since this reference specifically addresses the size and shape of a trimmer line. However, the trimmer line of *Fogle* is neither "non-circular" nor "uniform" as claimed by Applicant. Applicant's use of a non-circular uniform trimming line enhances the cutting ability of the trimming line over circular trimming lines. There is no

suggestion, teaching, or motivation in *Fogle* to modify the trimmer line to the specifications as claimed by Applicant as *Fogle*'s use of a circular trimming line is merely a variation of the various circular trimming lines common in the art while Applicant's non-circular trimming line is a departure from the trimming line configuration of *Fogle*. Accordingly, *Fogle* fails to account for the structure of the trimmer line as claimed by Applicant, wherein the cross-sectional shape of the trimmer line is non-circular and uniform across the entire length of the line.

C. Discussion of Applicant's Invention in View of the Prior Art References and Prior Art References Failure to Teach All of the Claimed Limitations of Applicant's Invention.

The discussion of *Stephens et al.*, *Ustin*, and *Iacona et al.* above are hereby incorporated by reference. As noted above, Applicants respectfully submit that the limitations of Applicant's claimed invention would not have been obvious for the reasons discussed in Section I above regarding *Stephens et al.*, *Ustin*, and *Iacona et al.* Accordingly, Applicant respectfully requests a ruling by the Board of Patent Appeals and Interferences in Applicant's favor and allowance of claim 2.

In reviewing and studying the prior art references of *Stephens et al.*, *Ustin*, *Iacona et al.*, and *Fogle*, it is clear that none of the references touch on the structure of the monofilament line as taught by Applicants. The *Fogle* patent accounts for a monofilament line that is twisted along the length of the line. Furthermore, the cross-section of the monofilament line of *Fogle* is circular as clearly depicted in Fig 3. There is no suggestion for taking the monofilament line and changing the cross-sectional shape beyond that detailed by *Fogle*. Nor is there a suggestion in *Fogle* to remove the helical twists along the length of the monofilament line to enable the cross-section to be uniform along the entire length of the line. *Fogle* itself details the presence of non-uniformity in its trimmer line as non-twisted portions (30A) and (40A) in Figs. 6-9. "To establish prima facie obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art." MPEP §2143.03 (citing *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974)). Clearly, the *Fogle* patent does not teach the limitations of the trim line construction as suggested by the Examiner. *Fogle* has a circular cross section, See Col. 4, lines

2-9, and *Fogle* clearly has a helical twist imparted non-uniformly across the length of the line. There is no teaching or suggestion in *Fogle* to impart the elements of uniformity and non-circular cross section into the structure of the monofilament line. Accordingly, Applicants respectfully submit that claim 2 would not have been obvious for the above outlined reasons and a ruling by the Board of Patent Appeals and Interferences in Applicant's favor and allowance of claim 2 is respectfully requested.

D. Discussion of Applicant's Invention in View of the Prior Art References and Prior Art References Failure to Teach the Desirability of Applicant's Invention.

The discussion of *Stephens et al.*, *Ustin*, and *Iacona et al.* above are hereby incorporated by reference. As noted above, Applicants respectfully submit that the limitations of Applicant's claimed invention would not have been obvious for the reasons discussed in Section I above regarding *Stephens et al.*, *Ustin*, and *Iacona et al.* and this Section II, subsections A-C regarding *Fogle*. Applicant contends that the prior discussion clearly mitigates in favor of concluding that the prior art references utilized by the Examiner fail to teach the desirability of Applicant's invention. Accordingly, Applicant respectfully requests a ruling by the Board of Patent Appeals and Interferences in Applicant's favor and allowance of claim 2.


#### IV. Conclusion

In view of the rejections presented by the Examiner in the Office Action made final, it appears clear on the record that none of the references, whether read individually or together, obviate Applicant's invention based upon the legal definition of obviousness. One reference cited by the Examiner (*Ustin*) is not from analogous art in that it relates to electrical connectors and not trimmer lines. Although three of the prior art references cited by the Examiner relate to monofilament trimmer lines, none of the references combine each of the elements as presented in Applicant's invention or suggest the desirability of modifications present such that one skilled in the art would find it obvious to incorporate such modifications. In fact, neither *Stephens et al.*, *Iacona et al.*, nor *Fogle* mentions or suggests the use of a collar incorporating a flange as a single concentric unit, nor do they teach or suggest strengthening the monofilament line by extending

the collar from the flange to the end of the monofilament line. Accordingly, as noted above, it is improper to use Applicant's claimed invention as a template for hindsight reconstruction or as the very means for drawing to the obviousness of the claimed invention even if that could construct the claimed invention where the prior art is otherwise not analogous nor suggests the desirability for one skilled in the art to incorporate such modifications.

Applicant believes that those skilled in the art have failed to solve the problem as claimed by Applicant. Accordingly, for the reasons outlined above, Applicant respectfully requests the Board of Patent Appeals direct allowance of this application and all pending claims.

Respectfully submitted,

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Date: November 28, 2003

**Appendix:**

1. A trimmer line comprising:
  - an elongate monofilament having a proximal end and a distal end;
  - a collar secured to said distal end of said monofilament, wherein said collar has a hollow interior section adapted to receive said monofilament;
  - said collar comprises a proximal end and a distal end;
  - said distal end of said collar is flush with said distal end of said monofilament and said proximal end of said collar is adapted to extend toward said proximal end of said monofilament;
  - said proximal end of said collar comprises a flange;
  - said flange and said collar are a single concentric unit;
  - said flange includes an external diameter greater than an external diameter of said collar;
  - said flange is adapted to place said monofilament adjacent to an aperture in a trimming apparatus; and
  - said distal end of said collar encircles a portion of said monofilament extending from said flange to said distal end of said collar.
2. The trimmer line of claim 1, wherein said monofilament comprises a non-circular uniform cross section from said proximal end to said distal end of said monofilament.
3. The trimmer line of claim 1, wherein said collar comprises a hollow circular cross-section adapted to extend from said distal end of said monofilament to said flange.
5. The trimmer line of claim 1, wherein said collar is crimped to said monofilament.
6. The trimmer line of claim 5, wherein said crimp forms an indentation into said monofilament forward of said distal end.

7. The trimmer line of claim 6, wherein said crimp is located  $\frac{1}{3}$  the distance from the distal end of the collar.
8. The trimmer line of claim 6, wherein placement and position of said collar and said crimp is adapted to reduce stress and strain on said monofilament and to prevent premature breakage of said monofilament from said collar.
9. A trimmer line for a trimmer comprising:
  - said trimmer comprising a cutting head having a housing with a first end adapted to be mounted to a drive shaft, and a second end having an elongated annular flange and an aperture in said flange extending from an interior wall to an exterior wall;
  - said trimmer line comprising a finite monofilament length comprising a proximal end and a distal end;
  - a collar mounted to said distal end of said monofilament;
  - said collar comprising a proximal end and a distal end, said distal end of said collar is adapted to be flush with said distal end of said monofilament, and said proximal end of said collar comprising a flange;
  - said flange and said collar are a single concentric unit;
  - said flange includes an external diameter greater than an external diameter of said collar; and
  - said flange of said collar comprising a distal end and a proximal end, wherein said proximal end of said flange is adapted to be placed in communication with said interior wall of said aperture of said cutting head flange.
10. The trimmer line of claim 9, wherein a portion of said monofilament extending from said distal end of said collar to said flange rests within said interior wall of said cutting head.
11. The trimmer line of claim 9, wherein said collar is within said interior wall of said cutting head.

12. The trimmer line of claim 11, wherein said collar comprises a crimp adapted to secure said collar to said monofilament.
13. The trimmer line of claim 12, wherein said crimp forms an indentation into said monofilament.
15. The trimmer line of claim 12, wherein positioning of said collar and said crimp is adapted to reduce stress and strain on said monofilament and is adapted to prevent breakage of said monofilament from said collar.
16. The trimmer line of claim 9, wherein said monofilament further comprises a spur mounted between said flange and said proximal end of said monofilament.
17. The trimmer line of claim 9, wherein said collar is comprised of a metallic material.
18. The trimmer line of claim 17, wherein said metallic material is brass.
19. A trimmer line for a line trimmer cutting head comprising:
  - said cutting head comprises a housing with a first end adapted to be mounted to a drive shaft of a line trimmer apparatus and a second end with an elongated open annular flange;
  - said annular flange comprises a wall with an interior side and an exterior side, and said wall includes an aperture therein adapted to extend from said interior side to said exterior side of said wall;
  - said trimmer line comprising a first end adapted to be inserted through said aperture from said interior side to said exterior side of said wall;
  - said trimmer line comprising a second end with a collar adapted to extend from said second end to said interior side of said wall; and
  - said collar comprises a proximal end with a flange having an external diameter greater than a diameter of said aperture, and said flange and said collar are a single concentric unit, wherein said flange is adapted to rest against said interior side of said wall.